

WHAT IS CLAIMED IS:

1 1. For use in a fixed wireless access network comprising a
2 plurality of base stations capable of bidirectional time division
3 duplex (TDD) communication with wireless access devices disposed at
4 a plurality of subscriber premises, a TDD frame transmission
5 synchronization apparatus comprising:

6 a frame allocation controller capable of receiving from
7 a first radio frequency (RF) modem shelf associated with a first
8 base station access requests generated by a first group of wireless
9 access devices communicating with said first base station and
10 determining from traffic requirements associated with said access
11 requests a time duration of a longest downlink portion of TDD
12 frames used by a first one of a plurality of RF modems in said RF
13 modem shelf to communicate with a first wireless access device,
14 wherein said frame allocation controller further determines a frame
15 allocation of the downlink portion and the uplink portion of TDD
16 frames used by said plurality of RF modems to communicate with said
17 first group of wireless access devices.

1 2. The TDD frame transmission synchronization apparatus as
2 set forth in Claim 1 wherein said frame allocation is capable of
3 preventing a second wireless access device from transmitting an
4 uplink portion of a TDD frame received by a second RF modem during
5 transmission by said first RF modem of a downlink portion of a TDD
6 frame.

1 3. The TDD frame transmission synchronization apparatus as
2 set forth in Claim 2 further comprising a clock signal distribution
3 circuit capable of synchronizing the starting points of the
4 downlink portions of TDD frames transmitted by said plurality of RF
5 modems in said RF modem shelf.

1 4. The TDD frame transmission synchronization apparatus as
2 set forth in Claim 3 wherein said frame allocation is determined
3 from said time duration of said longest downlink portion.

1 5. The TDD frame transmission synchronization apparatus as
2 set forth in Claim 4 wherein said frame allocation is further
3 determined from a time duration of a guard band between said uplink
4 portions and said downlink portions.

1 6. The TDD frame transmission synchronization apparatus as
2 set forth in Claim 5 wherein said frame allocation controller is
3 further capable of receiving from a second radio frequency (RF)
4 modem shelf associated with a second base station access requests
5 generated by a second group of wireless access devices
6 communicating with said second base station.

1 7. The TDD frame transmission synchronization apparatus as
2 set forth in Claim 6 wherein said frame allocation controller
3 determines from traffic requirements associated with said access
4 requests generated by said first and second groups of wireless
5 access devices a time duration of a longest downlink portion of TDD
6 frames used by a third RF modem associated with one of said first
7 and second RF modem shelves to communicate with a third wireless
8 access device.

1 8. The TDD frame transmission synchronization apparatus as
2 set forth in Claim 7 wherein said frame allocation controller
3 further determines a frame allocation of the downlink portion and
4 the uplink portion of TDD frames used by said plurality of RF
5 modems in said first RF modem shelf and a plurality of RF modems in
6 said second RF modem shelf to communicate with said first and
7 second groups of wireless access devices.

1 9. The TDD frame transmission synchronization apparatus as
2 set forth in Claim 8 wherein TDD frame transmission synchronization
3 apparatus is disposed in said first RF modem shelf.

1 10. The TDD frame transmission synchronization apparatus as
2 set forth in Claim 8 wherein TDD frame transmission synchronization
3 apparatus is disposed in a central office facility of a telephone
4 network.

1 11. A fixed wireless access network comprising:

2 a plurality of base stations capable of bidirectional
3 communication time division duplex (TDD) communication with
4 wireless access devices disposed at a plurality of subscriber
5 premises; and

6 a TDD frame transmission synchronization apparatus
7 comprising:

8 a frame allocation controller capable of receiving
9 from a first radio frequency (RF) modem shelf associated with
10 a first base station access requests generated by a first
11 group of wireless access devices communicating with said first
12 base station and determining from traffic requirements
13 associated with said access requests a time duration of a
14 longest downlink portion of TDD frames used by a first one of
15 a plurality of RF modems in said RF modem shelf to communicate
16 with a first wireless access device, wherein said frame
17 allocation controller further determines a frame allocation of
18 the downlink portion and the uplink portion of TDD frames used
19 by said plurality of RF modems to communicate with said first
20 group of wireless access devices.

12. The fixed wireless access network as set forth in Claim 11 wherein said frame allocation is capable of preventing a second wireless access device from transmitting an uplink portion of a TDD frame received by a second RF modem during transmission by said first RF modem of a downlink portion of a TDD frame.

13. The fixed wireless access network as set forth in Claim 12 further comprising a clock signal distribution circuit capable of synchronizing the starting points of the downlink portions of TDD frames transmitted by said plurality of RF modems in said RF modem shelf.

14. The fixed wireless access network as set forth in Claim 13 wherein said frame allocation is determined from said time duration of said longest downlink portion.

15. The fixed wireless access network as set forth in Claim 14 wherein said frame allocation is further determined from a time duration of a guard band between said uplink portions and said downlink portions.

1 16. The fixed wireless access network as set forth in
2 Claim 15 wherein said frame allocation controller is further
3 capable of receiving from a second radio frequency (RF) modem shelf
4 associated with a second base station access requests generated by
5 a second group of wireless access devices communicating with said
6 second base station.

1 17. The fixed wireless access network as set forth in
2 Claim 16 wherein said frame allocation controller determines from
3 traffic requirements associated with said access requests generated
4 by said first and second groups of wireless access devices a time
5 duration of a longest downlink portion of TDD frames used by a
6 third RF modem associated with one of said first and second RF
7 modem shelves to communicate with a third wireless access device.

1 18. The fixed wireless access network as set forth in
2 Claim 17 wherein said frame allocation controller further
3 determines a frame allocation of the downlink portion and the
4 uplink portion of TDD frames used by said plurality of RF modems in
5 said first RF modem shelf and a plurality of RF modems in said
6 second RF modem shelf to communicate with said first and second
7 groups of wireless access devices.

1 19. The fixed wireless access network as set forth in
2 Claim 18 wherein TDD frame transmission synchronization apparatus
3 is disposed in said first RF modem shelf.

1 20. The fixed wireless access network as set forth in
2 Claim 18 wherein TDD frame transmission synchronization apparatus
3 is disposed in a central office facility of a telephone network.